

NATURAL RESOURCES CONSERVATION SERVICE
Wyoming
CONSTRUCTION SPECIFICATIONS
FOR
WATERING FACILITY

(Owner/Operator)	(Project Title)
<p>GENERAL</p>	
<p>Installation shall be in accordance with an approved design and plan. Details of construction shown on the drawings but not included herein are considered as a part of this specification. Construction activities shall be in accordance with applicable OSHA regulations.</p>	<p><u>Concrete compressive strength</u> shall be at least 3000 psi at 28 days. The mix design shall be in accordance with ASTM C 94 and this specification.</p> <p><u>Cement</u> shall be low alkali Type II or IIA Portland cement.</p> <p><u>Fly ash</u> shall conform to requirements of ASTM C 618 as applicable.</p>
<p>EXCAVATION</p>	
<p>The foundation area will be cleared of all roots, brush, sod and debris. The base materials for the trough shall be placed on a firm foundation. Unsuitable materials shall be removed. Gravel, rock or other material as shown on the drawings shall be placed under and around the trough to provide drainage and minimize trampling by livestock.</p>	<p><u>Water reducing admixtures</u> shall be Type "A" meeting the requirements of ASTM C 494.</p> <p><u>Coarse aggregate</u> shall be maximum size of 1-1/2 inches per designations in ASTM C 33.</p> <p><u>Air entrainment</u> conforming to the requirements of ASTM C 260, shall be used. The air content shall be 5 to 7 percent.</p> <p><u>Forms</u> shall conform to the shapes, lines, and dimensions as shown on the drawings. They shall be braced and/or tied together so as to maintain position and shape and be sufficiently tight to prevent leakage of mortar. Forms shall be thoroughly oiled or wetted and cleaned of debris prior to placement of concrete.</p>
<p>MATERIAL</p>	
<p>The trough shall be constructed of the materials as specified on the drawings.</p>	<p><u>Reinforcing steel</u> deformed bars shall meet the requirements of ASTM A 615 and welded wire reinforcement shall meet the requirements of ASTM A 185. All reinforcement shall be free from rust, oil, grease, paint or other deleterious matter. Items to be embedded in the concrete shall be positioned accurately and firmly anchored to prevent displacement during placement of</p>
<p>CONCRETE</p>	
<p>Concrete work under these specifications shall be constructed to the dimensions, lines, and grades as shown on the drawings. Concrete shall have a consistency such that it can be worked into corners and around reinforcement, but without permitting the materials to segregate or excess water to collect.</p>	

concrete. The minimum splice length for deformed bars is 30 bar diameters and for welded wire mesh the larger of 6 inches or 2 mesh spacings.

Concrete shall be deposited as closely as possible to its final position and shall be worked into the corners and angles of the forms and around all reinforcement and embedded items in a manner to prevent segregation of aggregates or excessive laitance. Consolidation of concrete shall be accomplished by means of internal type mechanical vibrators, rodding, spading, or hand tamping. Concrete slump shall be in the range of 3 inches plus or minus 1 inch, unless cylinder test break data is submitted showing that compressive strength can be achieved with the higher slump.

Construction joints shall be provided as shown in the plans or as approved by the engineer. Joints shall be thoroughly cleaned and laitance removed before a new pour is made. Each joint shall be wetted immediately before the placing of new concrete.

Finishing. After the concrete has been consolidated, the unformed surfaces shall be given a wood float finish. Immediately after form removal, formed surfaces shall be cleaned of all defective concrete and effectively repaired. Snap ties shall be removed and the holes mortared.

Protection and Curing. Concrete shall be prevented from drying for a curing period of at least 7 days after it is placed. Exposed surfaces shall be kept continuously moist for the entire period. For formed surfaces, the protection may be accomplished by leaving the forms in place and keeping them wet for the entire curing period. In lieu of water curing, the concrete shall be cured by spraying with an approved sealing compound. The sealing compounds shall be applied as soon as practicable after the concrete is finished. The sealing compound

shall meet or exceed the requirements of ASTM C 309. All surfaces shall be kept moist until the compound is applied.

Concreting in Cold Weather. Before any concrete is placed, all ice, snow and frost shall be completely removed from all surfaces to be in contact with the new concrete and the temperature of these surfaces shall be raised to as close as may be practical to the temperature of the new concrete that is to be placed thereon. No concrete shall be placed on a frozen subgrade or on one that contains frozen materials. Concrete shall not be mixed or placed when daily minimum atmospheric temperature is less than 40 degrees F., unless facilities are provided to ensure the adequate protection of the concrete. Temperature of the concrete at the time of placing shall not be less than 50 degrees F. or more than 90 degrees F. The use of accelerators or antifreeze compounds will not be allowed.

Concreting-in Hot Weather. The Contractor shall apply effective means to maintain the temperature of the concrete below 90°F during mixing, conveying, and placing.

WOOD ITEMS

Unless otherwise specified on the drawings, all timber and lumber shall not be less than select merchantable boards, construction grade beams or timbers.

METAL ITEMS

Steel shall be a minimum thickness of 20 gage. All metal item exception of galvanized or aluminum shall be painted with two coats of synthetic primer paint and one coat of aluminum paint or equivalent protective coatings.

FROST FREE PLASTIC/FIBERGLASS TROUGHS

Commercial frost-free stock troughs may be used when specified on the drawings. The manufacturer's installation instruction shall be followed. However the piping, foundation, site preparation shall also meet the minimum requirements of this specification.

RUBBER TIRE TROUGHS

Large rubber tires with concrete floors may be used when specified on the drawings.

WATER CONTROL

Float controls shall be installed when shown on the drawings. Float controls shall be protected from damage by livestock. The piping shall of the size, type and pressure class shown on the drawings.

CLEAN-UP

The site shall be cleared of all unused materials, forms, etc., needed for the construction. Waste earth material shall be smoothed and seeded.

ADDITIONAL SPECIFICATIONS